



A.D. 1856 N^o 739.

SPECIFICATION

OF

CONSTANT JOUFFROY DUMÉRY.

SMOKE-PREVENTING APPARATUS.

LONDON:

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1856.



A.D. 1856 N° 739.

Smoke-preventing Apparatus.

LETTERS PATENT to Constant Jouffroy Duméry, of Paris, in the Empire of France, for the Invention of “**IMPROVEMENTS IN SMOKE-PREVENTING APPARATUS.**”

Sealed the 19th August 1856, and dated the 27th March 1856.

COMPLETE SPECIFICATION filed by the said Constant Jouffroy Duméry at the Office of the Commissioners of Patents, with his Petition and Declaration, on the 27th March 1856, pursuant to the 9th Section of the Patent Law Amendment Act, 1852.

5 **TO ALL TO WHOM THESE PRESENTS SHALL COME, I, CONSTANT JOUFFROY DUMÉRY, of Paris, in the Empire of France, send greeting.**

WHEREAS I am in possession of an Invention for “**IMPROVEMENTS IN SMOKE-PREVENTING APPARATUS,**” and have petitioned Her Majesty to grant unto me, my executors, administrators, and assigns, Her Royal Letters Patent
10 for the same, and have made solemn declaration that I am the first and true Inventor thereof:

NOW KNOW YE, that I, the said Constant Jouffroy Duméry, do hereby declare that the following Complete Specification, under my hand and seal, fully describes and ascertains the nature of the said Invention, and the manner
15 in which the same is to be performed, reference being had to the accompanying Drawings, and to the letters and figures marked thereon, that is to say :—

Duméry's Improvements in Smoke-preventing Apparatus.

Certain improvements in the mode of preventing smoke were secured to me by Letters Patent, dated 18th January 1855, which improvements chiefly consist, 1st, in new modes of ascension of the fuel; 2d, in the propulsion of the fuel, whatever may be the mechanical means used for working the ascent upon inclined planes or surfaces made pervious to the air, or, in other words, 5 admitting of the mixing of the air with the burning parts during the ascension.

The present application is intended to secure to me as my private property the novel application of mechanical means for propelling the fuel in connection with the issues or air passages, which constitute the main object of this, as they did of my former Letters Patent, dated 18th January 1855, as was clearly set 10 forth by my former Complete Specification.

These new mechanical means of propulsion consist, first, in a continuous propelling apparatus with stationary radii; second, in various arrangements, such as movable surfaces, which allow the introduction of the fuel through movable panels without the interference of any propeller. 15

I shall now describe these two novel means of conveying or propelling the fuel. For obtaining a continuous ascension with only the assistance of star wheels or stationary radii, I transform each radius or propelling paddle into a sort of comb, each tooth of which is made to engage between two subsequent bars, so that the flat parts of the comb may fill up the interstices between the 20 bars. In such a position, supposing the bars and the radii were rectangular and the latter made to turn round their axis, there would be a cutting or breaking of the fuel engaged between each of them; but supposing either of the two, or even both, made curved or oblique, the interposed bodies will be driven or slide on both parts without suffering any alteration. Such is indeed 25 the arrangement shown at Figs. 1, 3, & 4; the fuel follows the direction of the arrows, actuated by the central pinion shaft, which is moving in the same direction. This arrangement allows the setting of my apparatus in a low and restricted place, as shown at Figs. 3 & 4,

When very dry fuel is made use of, I may merely apply jointly with massy 30 paddles stationary paddles slightly curved for the progressing fuel, being the more easily disentangled, as shown at Fig. 5.

The second mode of propulsion by means of movable surfaces may be effected in various manners: through circular grates; through bars sliding in two identical grooves, actuated by toothed wheels; through bars moved by an 35 endless chain.

The first process consists of drums made of disks, arranged at suitable distances, and acting as grates, the full or solid parts and the vacant spaces

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being in like proportions. These disks, as shown at Figs. 6, 7, & 8, are stayed together; and it only suffices, either by a gear power or by lateral catches, to impart to each disk a same analogous motion for the fuel starting on its ascensional progress. A stationary comb, forming an inclined surface, prevents the dropping of the cinders or clinkers from the front edge of the grate, but this can only be used for part of the apparatus, as shown at Figs. 9 & 10; nor would it dispense of the use of a propeller, its only purpose being to facilitate the conveying of the fuel, and thereby to effect the cleaning of the grates.

The second process consists in engaging the extreme ends of the transverse bars into a groove, so contrived as to be conformable to the line the grate is to describe, and to set the latter in motion by means of one or two toothed wheels, the teeth of which are alike conformable to the interstices left between each bar; the said bars are provided besides with small enlargements, for the purpose of keeping them apart and parallel.

The third process consists of an endless chain, formed by two rows of links, crossed by bars forming the joints, the whole being set in motion by means of a toothed wheel.

In this, as well as in the before-mentioned system, the upper curve may consist of a series of disks mounted on a central shaft and forming a turning grate, which is set in motion either by the mass of the ascending fuel or by a special power. I wish it to be distinctly understood that the present application, as well as the object of my former Letters Patent relates, 1st, to the particular mechanical means which have been described; and 2d, to the air passages through inclined planes or surfaces upon which the fuel is conveyed, thereby a continuous combustion is obtained, which is not interrupted by a fresh supply of fuel, and the combustible gases are also oxygenized previous to combustion. Thus, for metallurgical operations, and for such fire-places, the sides of which are made accessible, I obtain the igneous result, which constitutes the object of both the present and the former Letters Patent, by merely changing the form of the grates and lowering the feed hole, as shown at Figs. 13, 14, & 15; in which the raising plane may be simple or double, and consist of either straight lines or fractions of the same, or curves; that is to say, I may, when the place allows it, simplify the mechanical means of propulsion, making use of only such parts in my apparatus as relate to the conveying of the fuel upon inclined surfaces which are made pervious to the air. This is evidently the main part of my Invention, that which insures the success of all the various combinations I have described in this and the former Specifications.

It is almost needless to add, that the inversion of each of the various processes I have just described may prove perfectly good and practicable, and that

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from the combination of these processes with each other, or from the combination of the same with those described in my former Specification above alluded to, useful practical applications may result.

The following is a full and particular description of the annexed Sheet of Drawings. 5

At Fig. 1, which is a section of a curved scuttle, horn, or trumpet, with its continuous feeding machinery, I is an axis, bearing the radii D, D, D, which are in the line of the axis, of a size less than the average size of the lumps of fuel; D, arm or radius for pushing or propelling the fuel; E, movable plate, consisting of metallic blades inserted between the different series of the propelling radii, and forming as it were two combs, the teeth of which are inserted into one another; G, hole through which the fuel is introduced; F, part of the perforated or grated scuttle or trumpet, for the passage of air, and near which combustion is effected. 10

Fig. 2 represents a part section of the stationary and radiating combs. 15
D, D, D, are the radii, keyed on the axis; c, c, c, c, metallic blades, constituting the stationary part.

Fig. 3 is one of the various applications that the mechanism may be liable to.

Fig. 4, curved scuttle or trumpet, with a double system of radiating grated 20
paddles, feeding at the center of the grate and taking the coal at the lower part. In this Figure, D is a series of radii, forming parallel to the axis three perforated or grated paddles or combs; E, series of bars, also forming in the interstices of the teeth D a sort of open work, in which the said teeth D may freely pass; F, curved plane, on which the raw fuel slides when pushed or 25
propelled by the teeth D; G, the direction in which fuel is introduced; H, movable plate, turning with the shaft and the radiating paddles; I, axis; J, bottom of the curved scuttle or trumpet.

Fig. 5 is a trumpet or curved scuttle with propelling apparatus, consisting of solid paddles for artificial fuel. In this Figure, K is the axis; L, curved and 30
slightly arched paddles, for the better releasing the fuel; M, panels or sides of the trumpet or curved scuttle; N, perforated part, on which the mixing of the air and combustion are effected.

Fig. 6 shows a section of a charging scuttle with rotating grates or movable panels. 35

Fig. 7, a side view or lateral elevation of a trumpet with rotating grates.

Fig. 8, a plan of a trumpet with circular rotating grates. In these three last Figures the same letters of reference stand for the like parts. A, series of disks, forming the curve and the grate of the upper part; B six series of

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disks, each keyed on an axis, and so arranged and engaged as their upper surface may assume the inner form of the trumpets or scuttles ; C, axes of the disks ; D, ratchet wheels with teeth on their whole circumference ; E, clicks or fingers ; F, circles or rings carrying all the click shafts, for imparting at 5 once, by an alternate to-and-fro impulse, a rotary motion to all the disks ; G, lateral panels, which may be but very slightly inclined, in consequence of the propulsion of the fuel through the said panels.

Fig. 9 is a section of a double-feed trumpet, provided with four series of turning disks, which form a surface partly grated, fitted to part of a stationary 10 trumpet or scuttle.

Fig. 10 is a view and plan of the double trumpet, shown at Fig. 9. A, axes of the upper circular grates ; A', axes of the lower circular grates, serving at the same time to adjust the grates in the bottom of the trumpets ; B, lower grates ; C, lower panels of the trumpets ; D, lateral panels of the trumpets.

15 Figure 11 is a grate into which the fuel is introduced without direct propulsion, and so contrived as to be set into a fire box which is surrounded with water. In this Figure, S shows a succession of disks, forming a cylindrical grate, and mounted on the axis ; T, T, bars, forming inclined planes, on which combustion is to be effected after the mixing of the air ; U, U, toothed 20 wheels, into which are brought to gear each of the bars that constitute the fuel-conveying grate ; u, u^1 , axes of the toothed wheels ; V, V, V, bars ; X, guiding grooves, in which the extreme ends of the bars are engaged ; Y, inclined plane, admitting raw fuel ; Z, panels or lateral sides of the fire-place.

Fig. 12, fire-place, similar to the before mentioned, with bars, which are 25 part of an endless wire web and various other dispositions. O, lateral sides of the fire-place ; P, cylinder, consisting of disks or rings, which form a circular or cylindrical grate ; Q, Q, axes, each bearing two wheels, into which the framing or endless grate is brought to gear ; R, chain or links, each axis of which is a stud or bar ; H, the direction in which fuel is introduced.

30 Fig. 13 is a fire-place, the sides of which are accessible, and into which fuel is manually propelled. In this Figure, A is a generator ; B, a grate, projecting in the center ; C, an opening for the lateral admission of the air ; D, a table on which the fuel rests ; E, opening for shoveling in the coal.

Fig. 14 is a reverberatory furnace, with secondary grate, and a feed hole 35 lowered to the lower level of the grate. In this last instance the lateral admission of the air is effected through the masonry.

Fig. 15 shows a quite similar disposition, with straight grates and without the lateral holes.

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Figure 16 is a shovel, provided with an upper plate, in order to facilitate its drawing back.

To conclude, the various modes of ascension which have been specified, and which, in truth, constitute the main object of these Letters Patent, cannot by any means be effective but in connection with the free issues or passages for 5 the air, as described in my former Letters Patent, dated 18th January 1855, which issues or passages are intended to oxygenize the combustible gases previous to their introduction into the fire-place.

Having thus described the nature of my Invention, and the manner in which the same is or may be carried into effect, I wish it to be distinctly 10 understood that what I claim as novel, and therefore being secured to me by the herein-before in parts recited Letters Patent, is, the ascension of the fuel,—First, by means of screens or turning combs, as specified; second, by means of disks forming grates; third, by means of movable bars actuated by toothed wheels; fourth, by means of bars connected by two endless chains; 15 fifth, and lastly, by means of plain grates or inclined planes with lowering of the feed holes.

In witness whereof, I, the said Constant Jouffroy Duméry, have hereunto set my hand and seal, this 19th day of March, in the year of our Lord One thousand eight hundred and fifty-six.

20

C. J. DUMÉRY. (L.S.)

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FIG. 1.

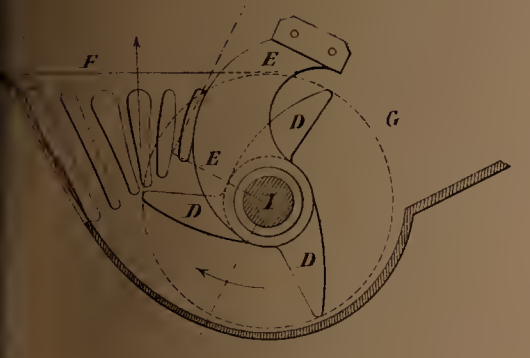


FIG. 2.

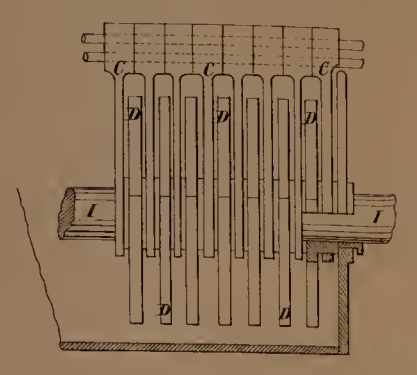


FIG. 3.

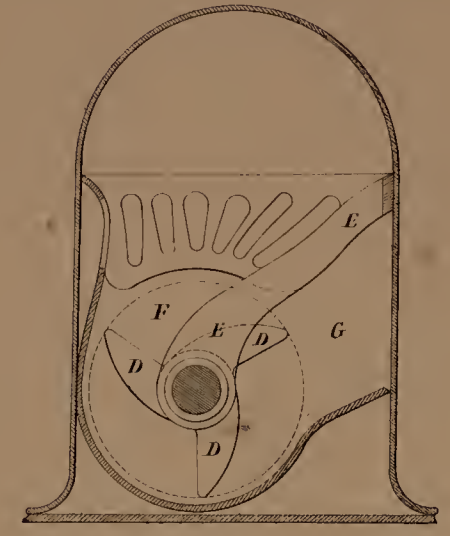


FIG. 4.

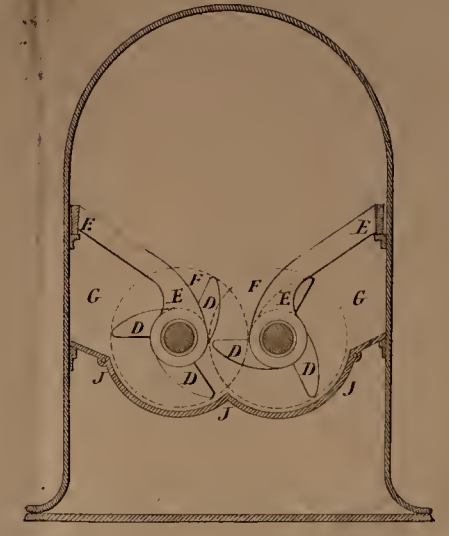


FIG. 5.

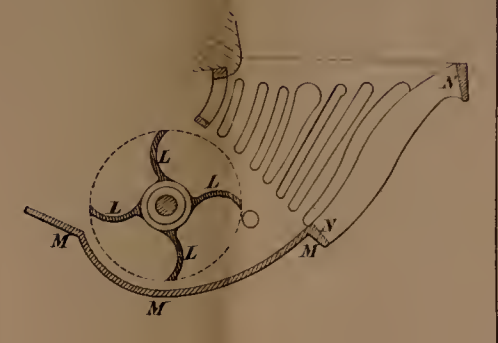


FIG. 6.

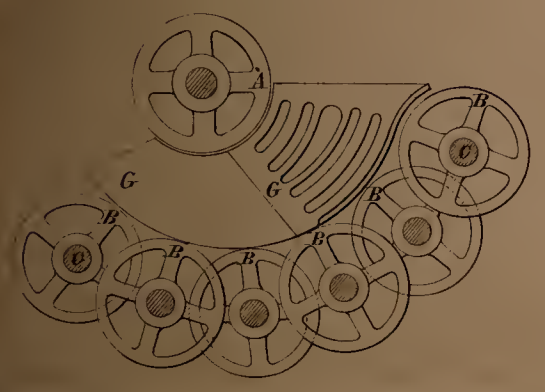


FIG. 9.

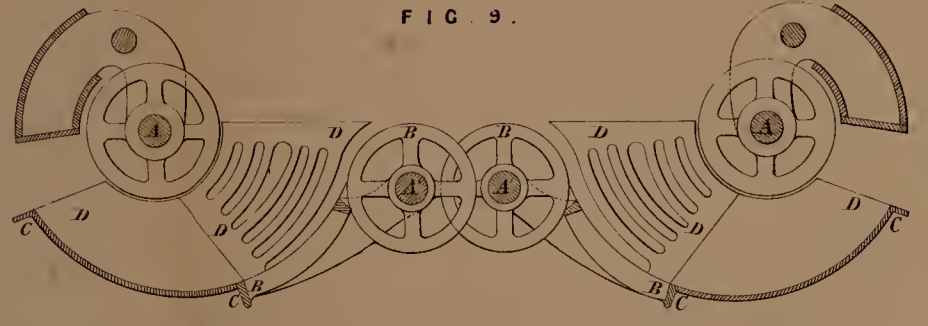


FIG. 10.

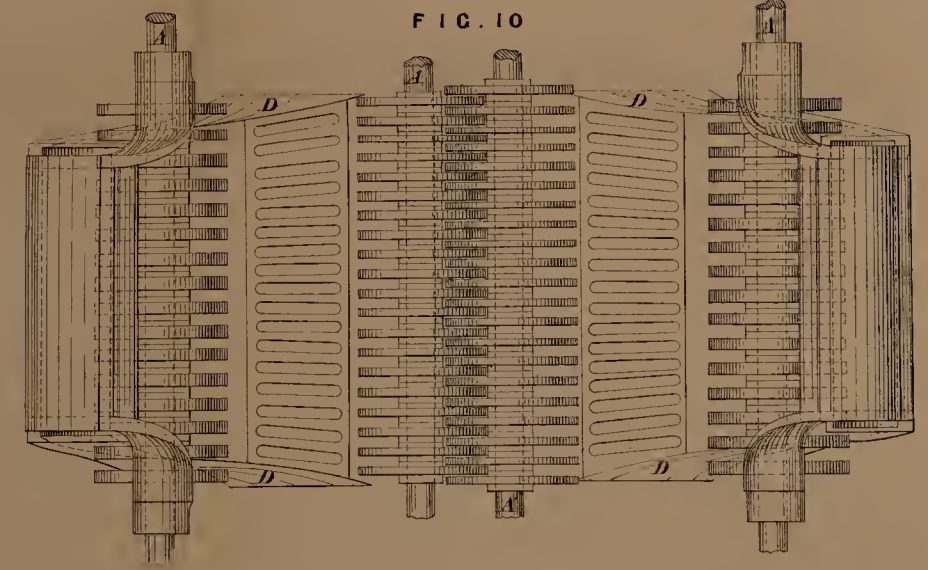


FIG. 7.

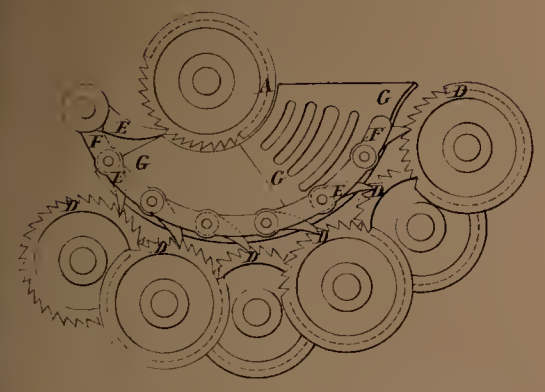


FIG. 11.

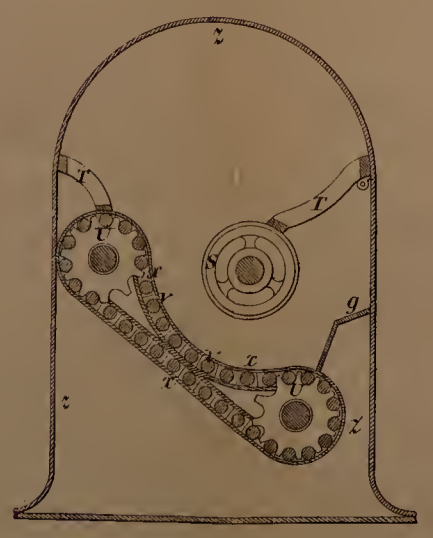


FIG. 12.

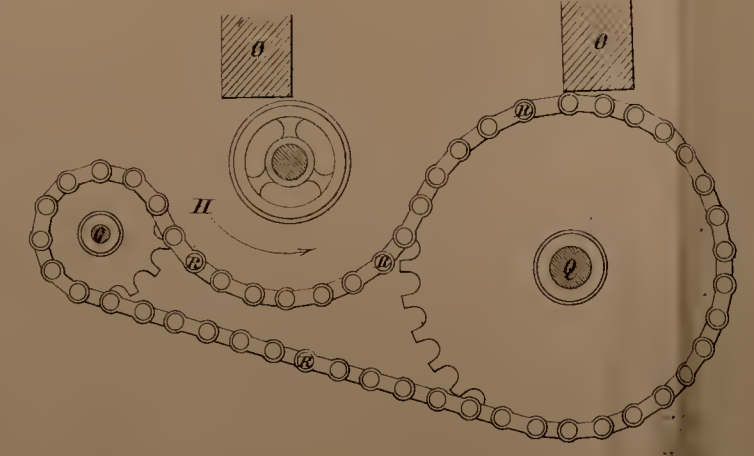


FIG. 13.

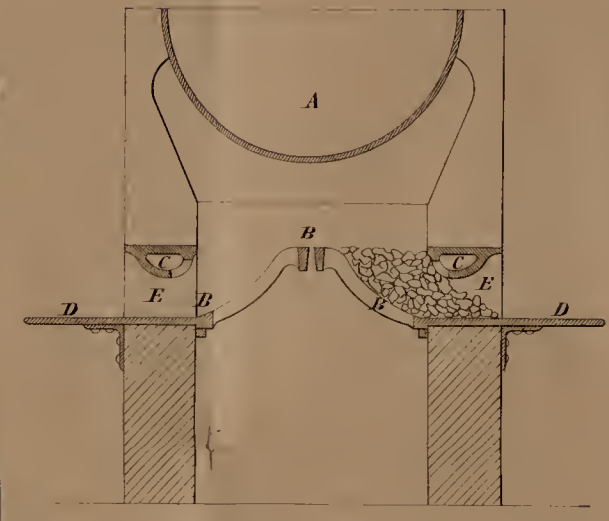


FIG. 14.

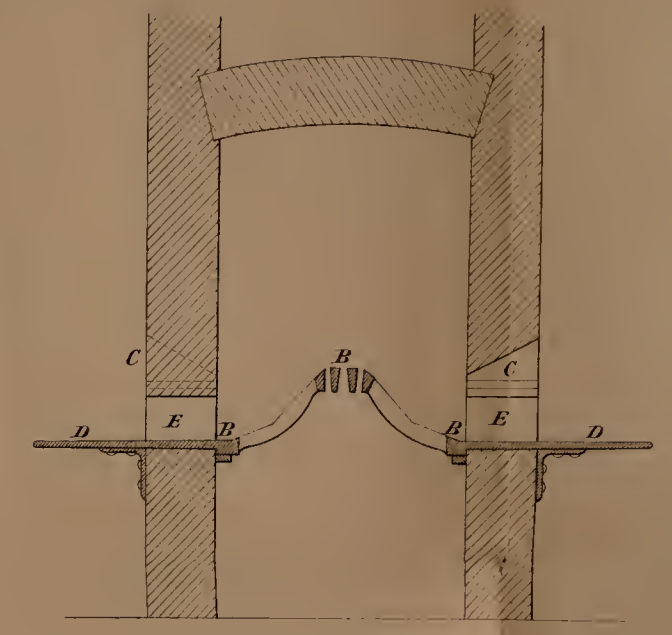


FIG. 15.

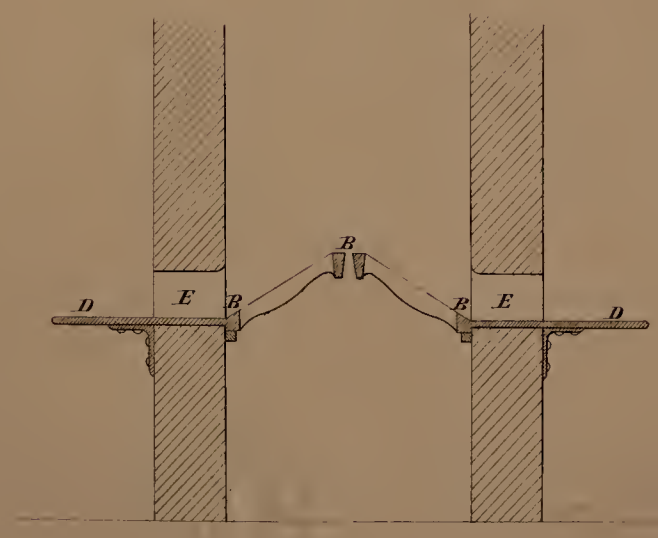


FIG. 16.



The filed drawing is not colored

